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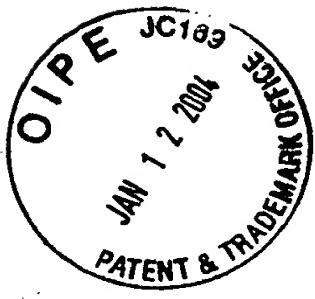
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Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 1 of 17

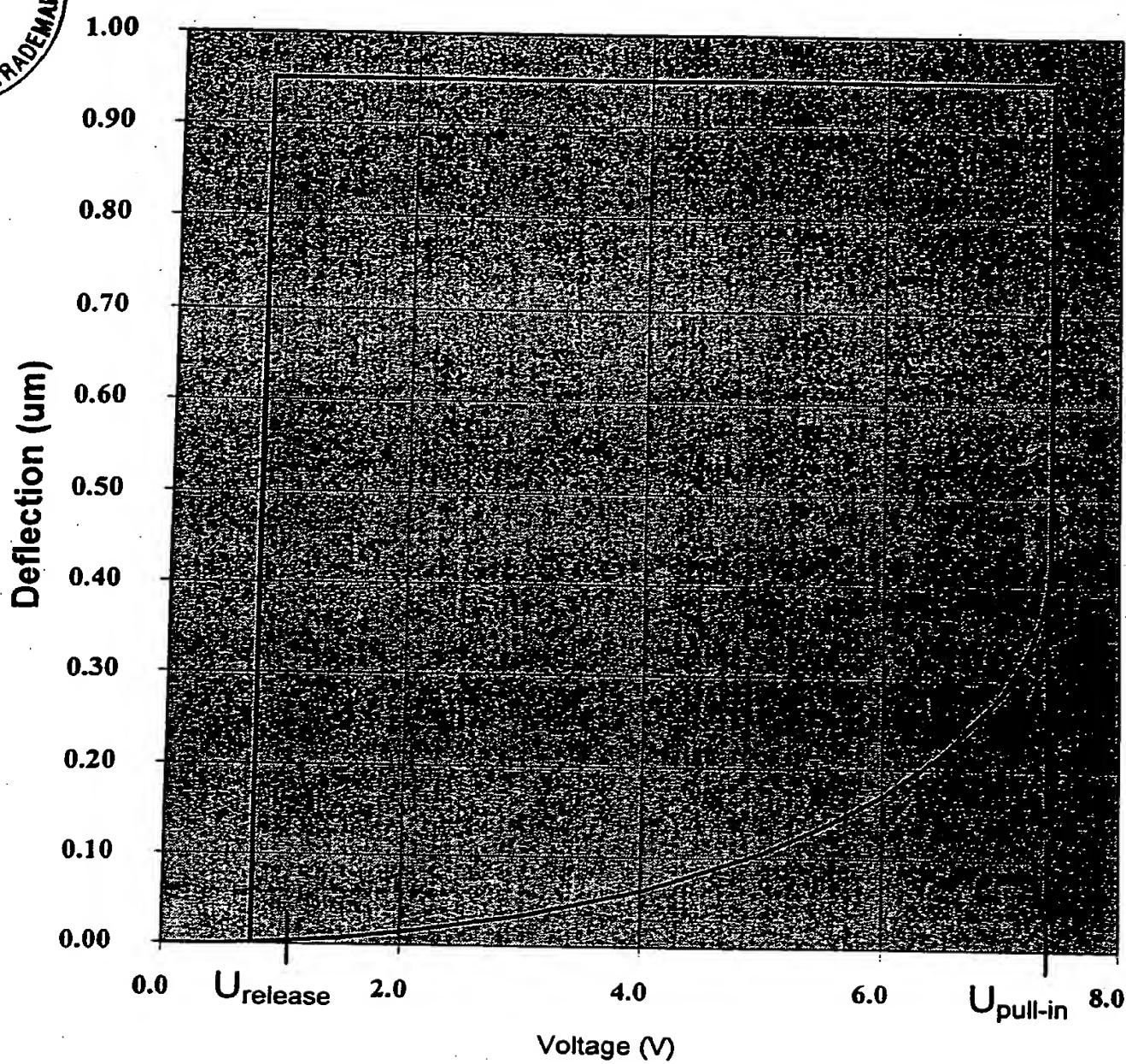


Fig. 1
PRIOR ART

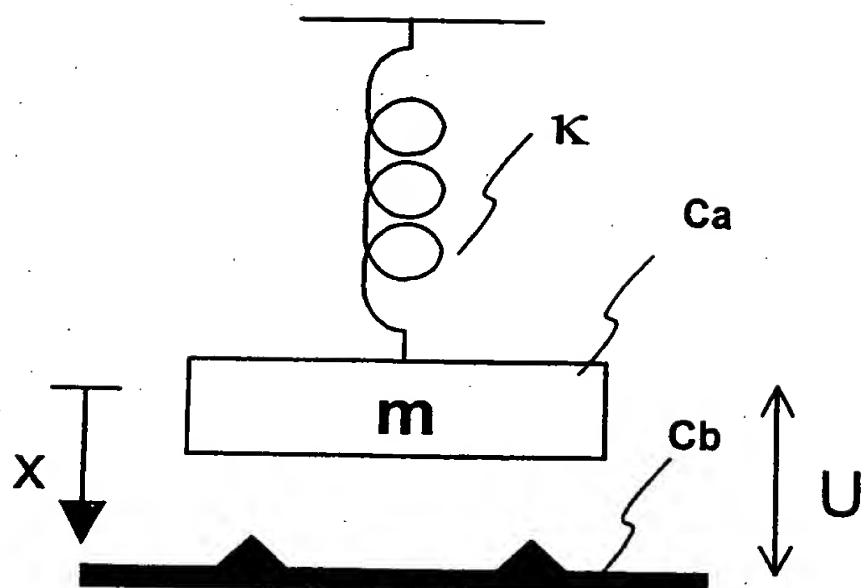


Fig. 2
PRIOR ART

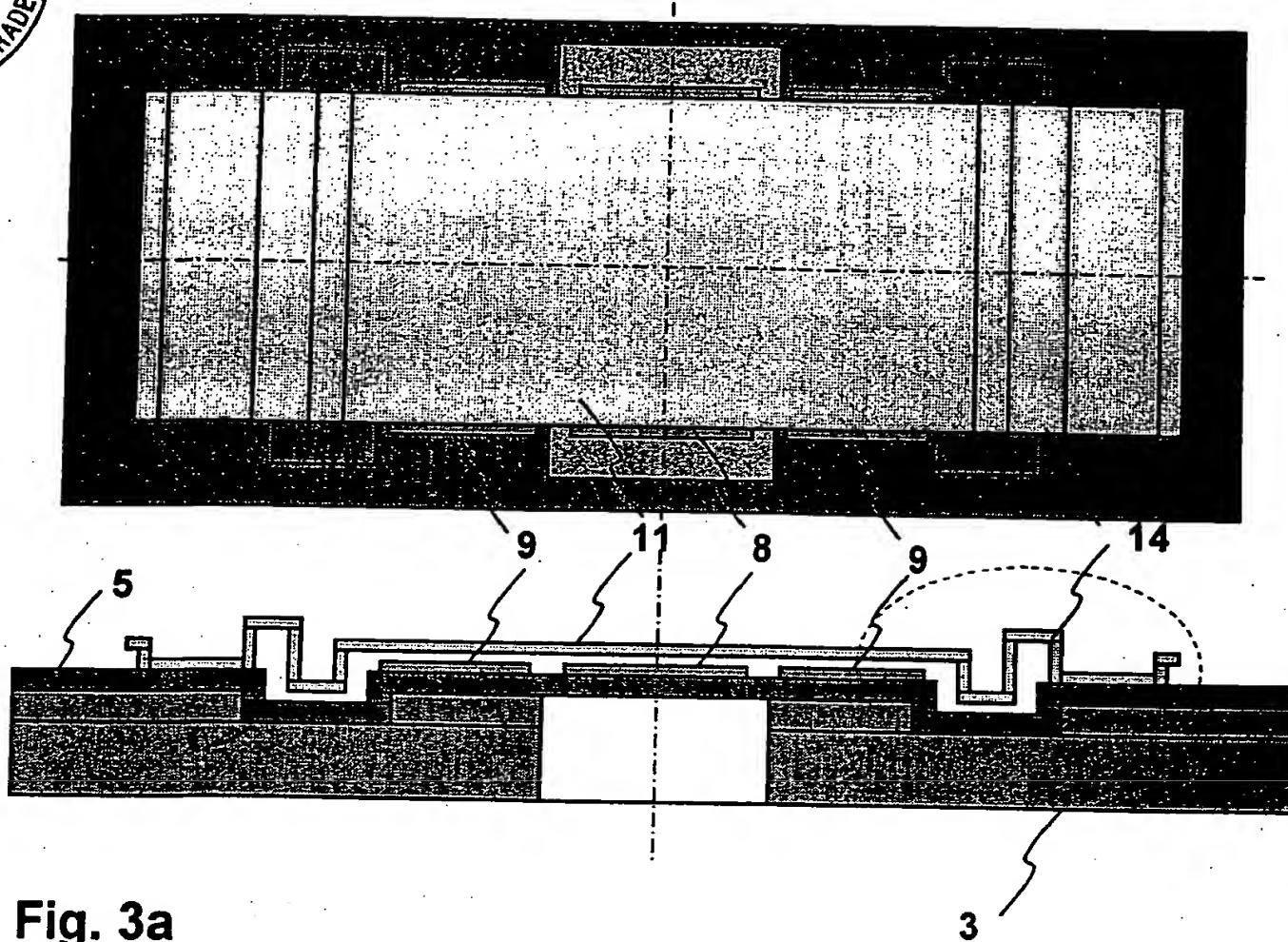
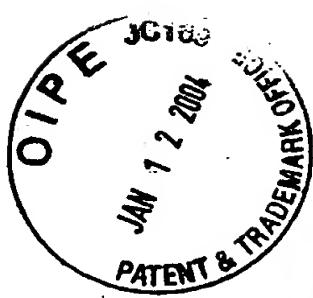


Fig. 3a

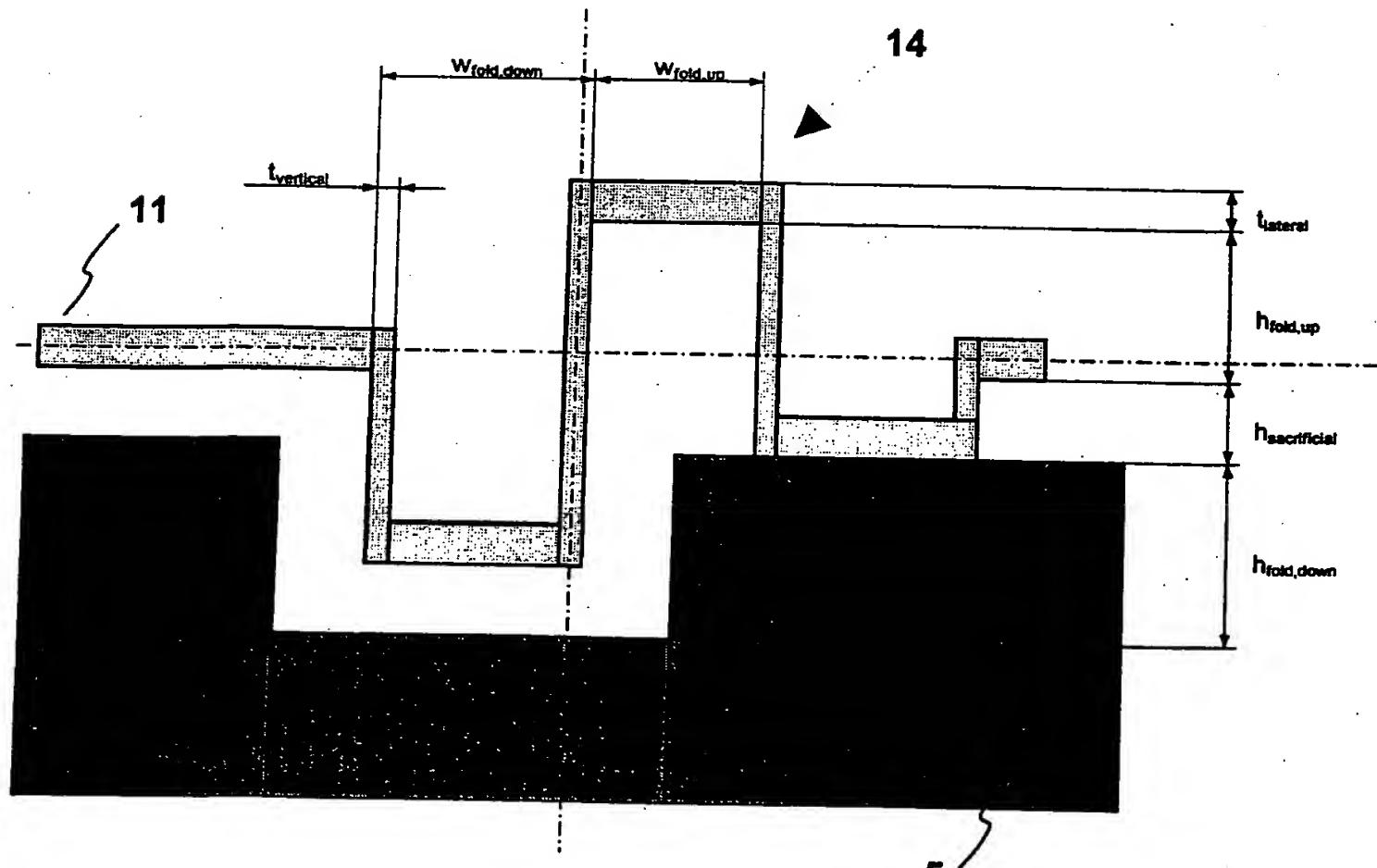
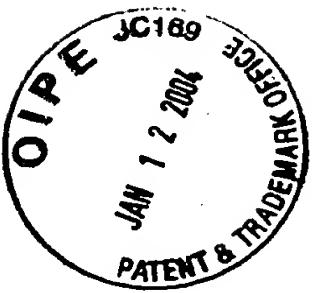


Fig. 3b



400

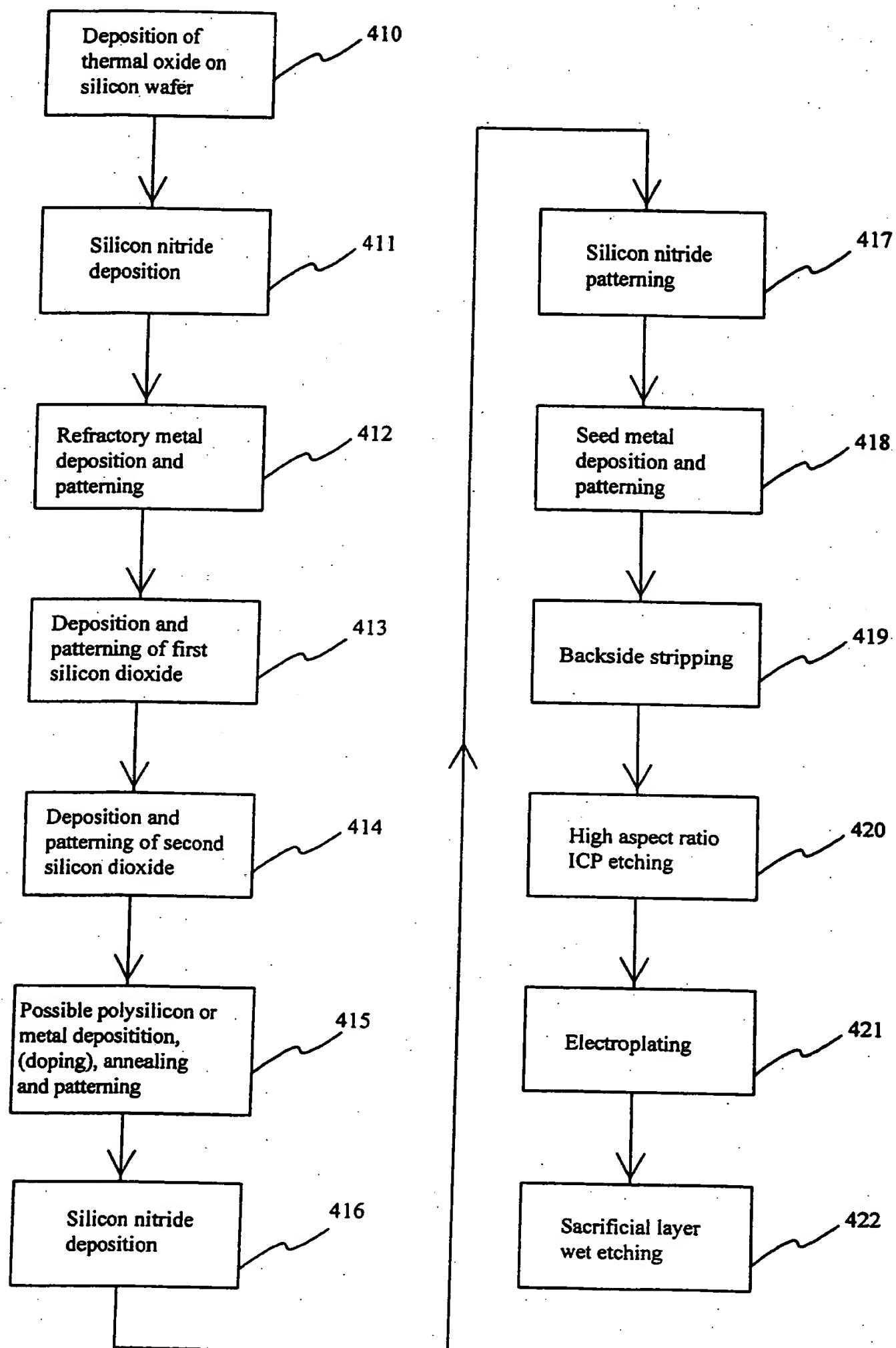
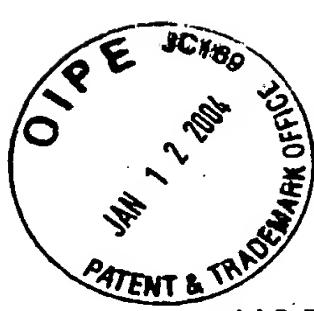


FIG. 4a



Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 4 of 17

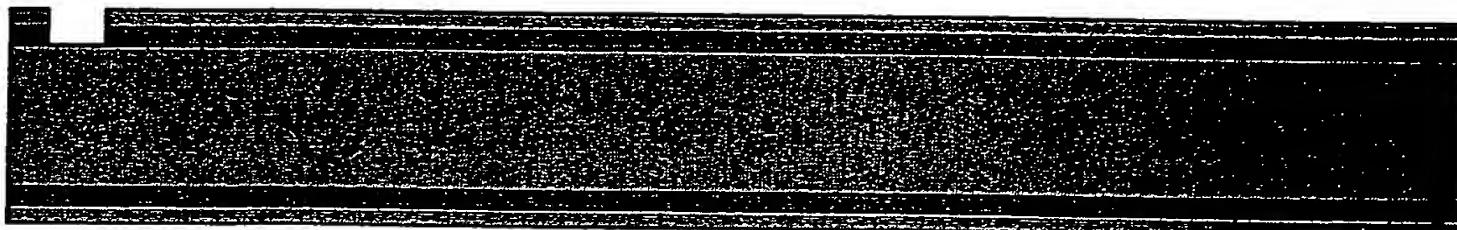
410 Thermal oxide ($\sim 1 \mu\text{m}$)



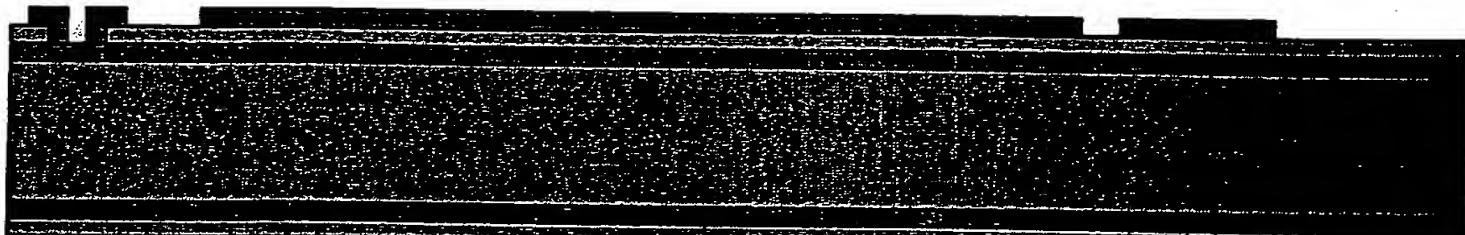
Silicon wafer



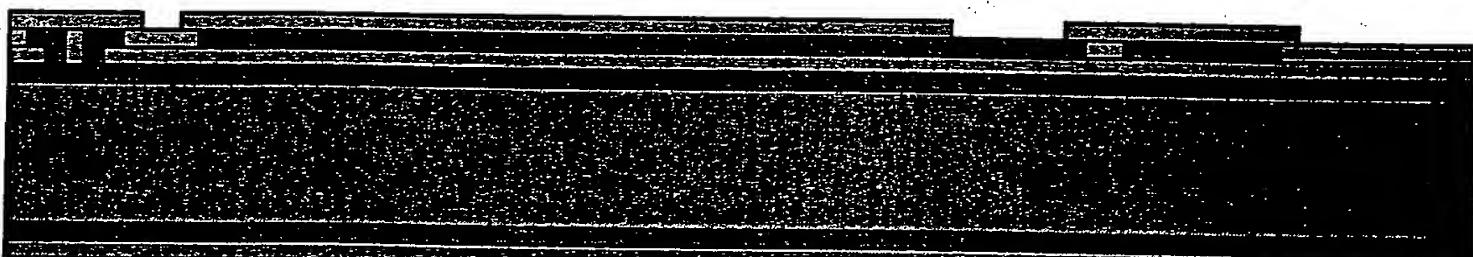
411 Silicon nitride deposition ($\sim 1 \mu\text{m}$) and patterning



412 Refractory metal (molybdeene or tungsten) deposition and patterning



413 First silicon dioxide deposition and patterning (plasma) ($0.4 - 0.5 \mu\text{m}$)



414 Second silicon dioxide deposition and patterning (plasma) ($0.5 \mu\text{m}$)

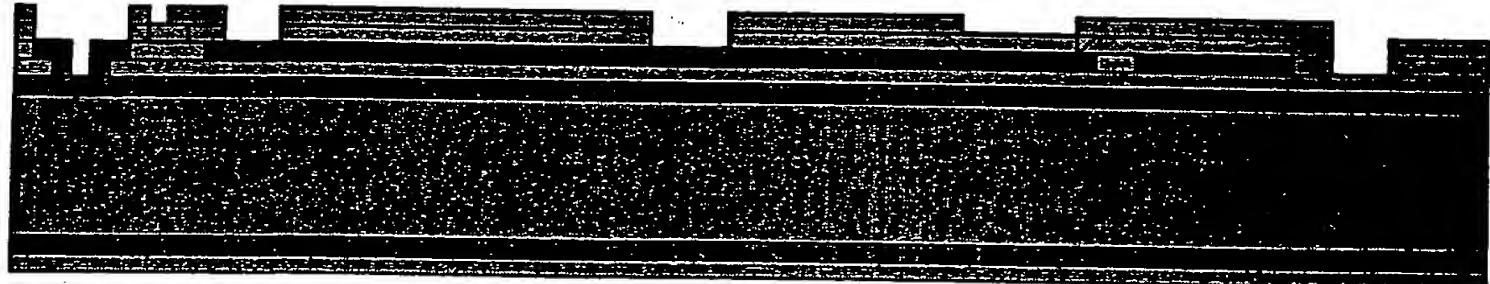
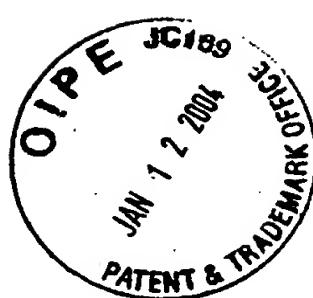
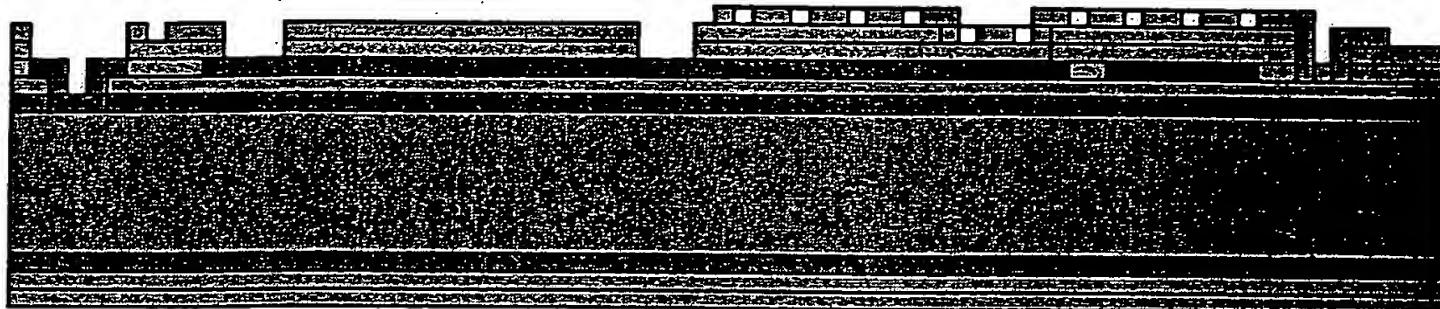


FIG. 4b

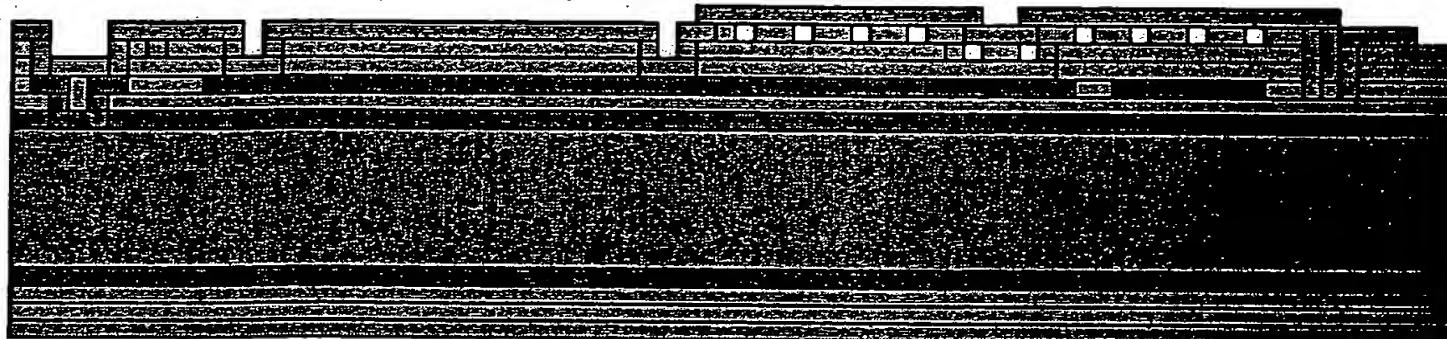


Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 5 of 17

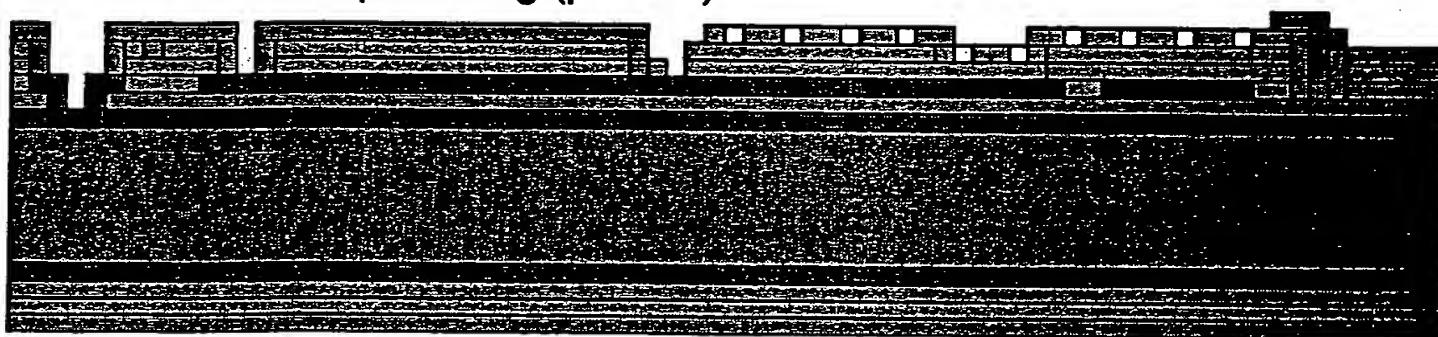
415 Polysilicon deposition (2-5 μm), doping, annealing and patterning;
(PolySi: $< 5 \Omega/\square$; tensile residual stress: 10 MPa)



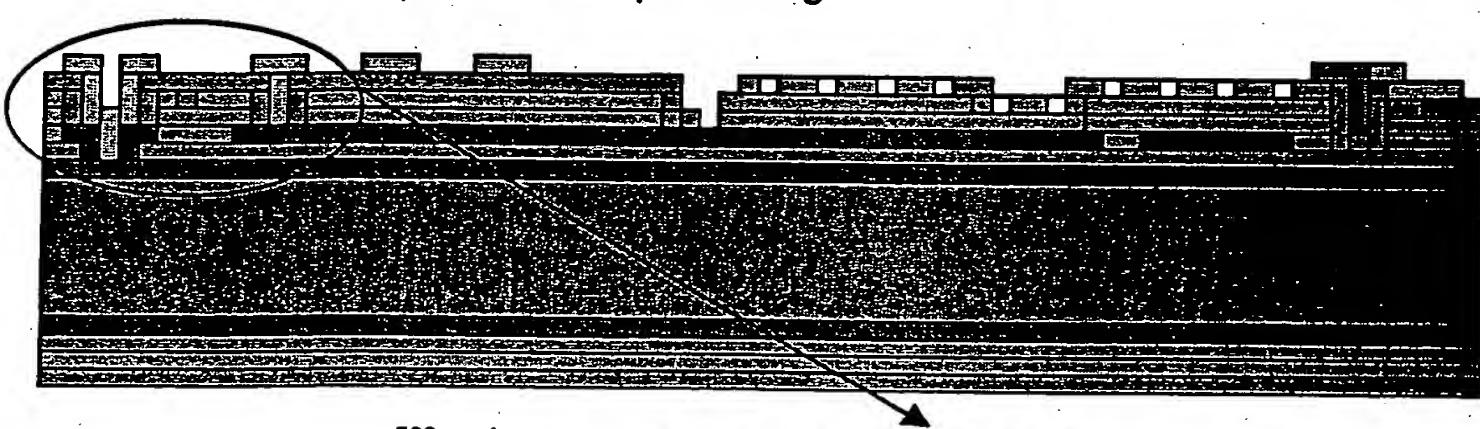
416 Silicon nitride deposition (0.3 μm)



417 Silicon nitride patterning (plasma)

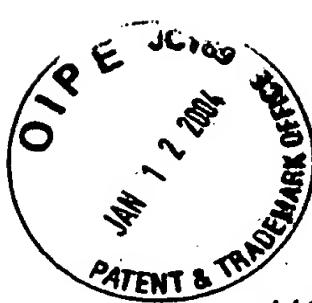


418 Seed metal deposition and patterning



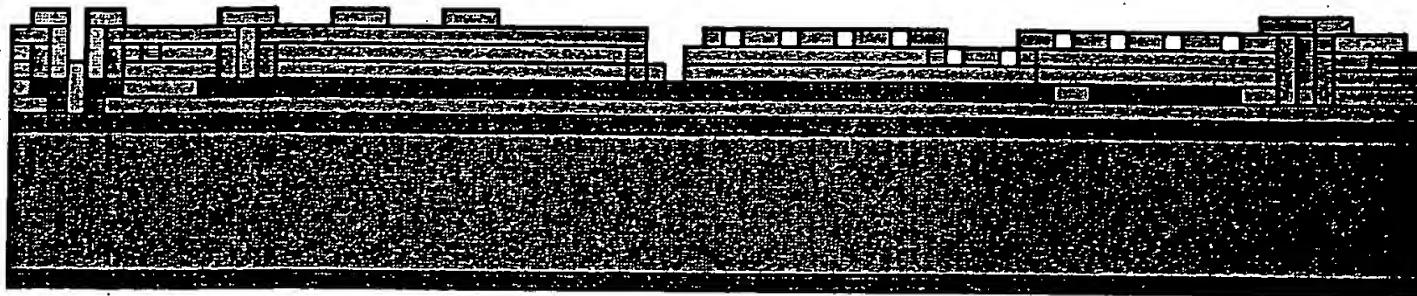
500 nm Au
300 nm SiN
800 nm SiO₂
500 nm TiW
1 μm SiN
1 μm SiO₂

FIG. 4c

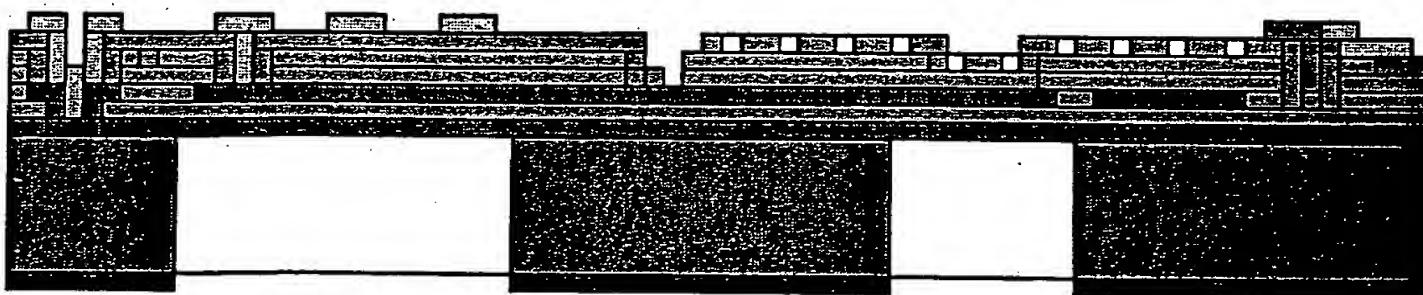


Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunabl ...
Inventor: Tapani Ryhanen et al. Page # 6 of 17

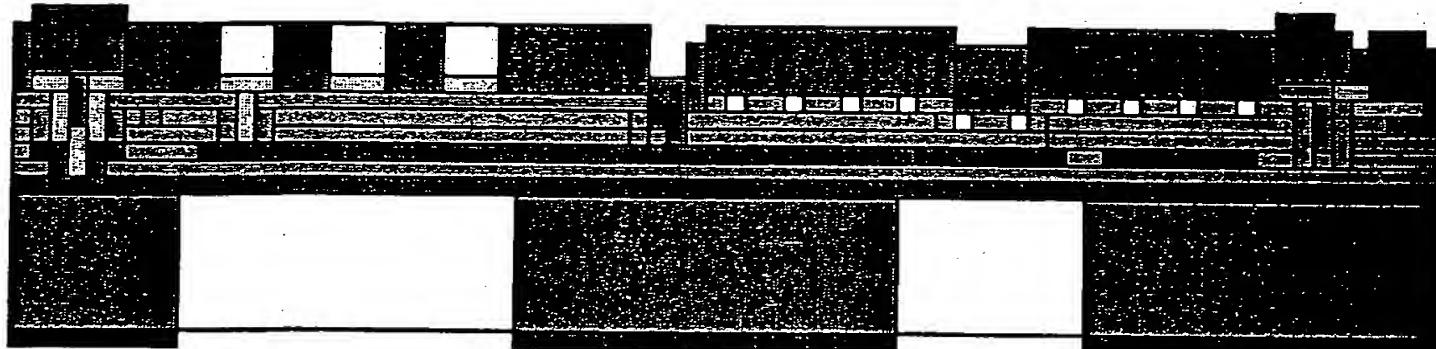
419 Backside stripping (plasma)



420 High aspect ratio ICP etching



421 Electroplating



422 Sacrificial layer wet etching (HF)

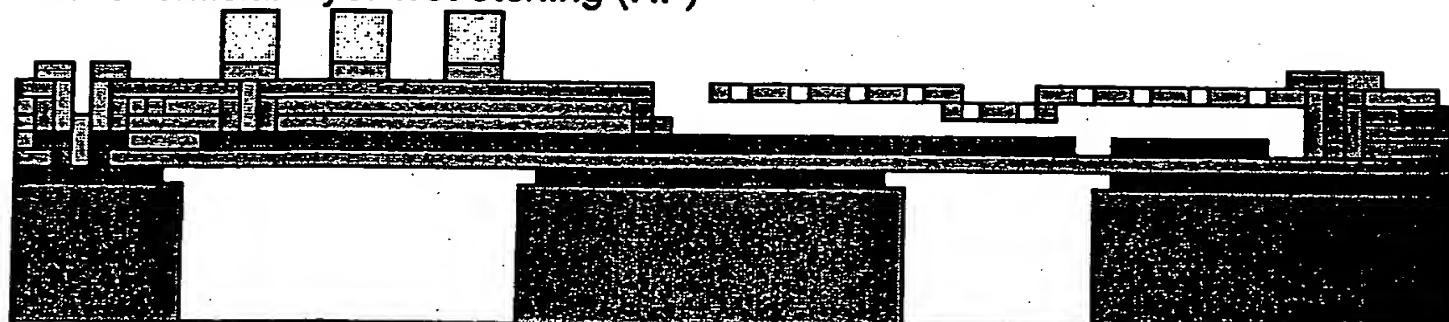
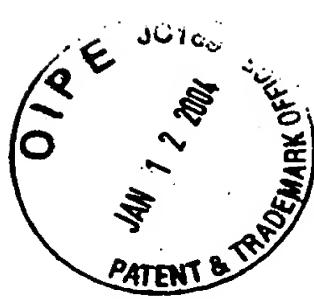


FIG. 4d



500

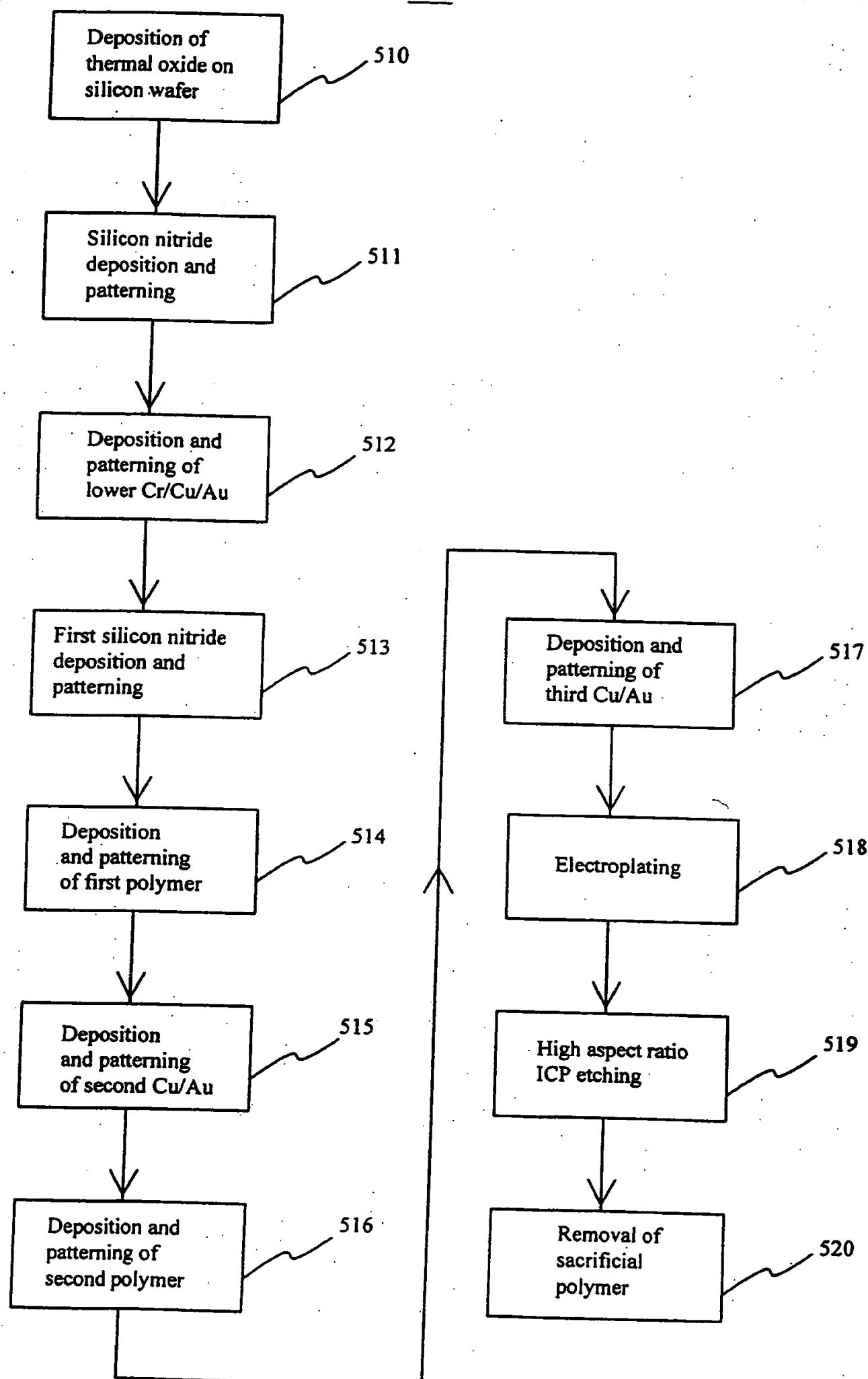
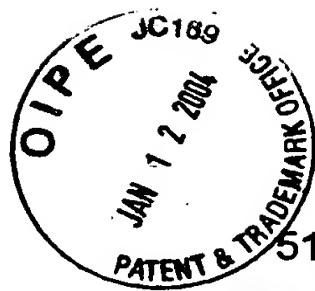
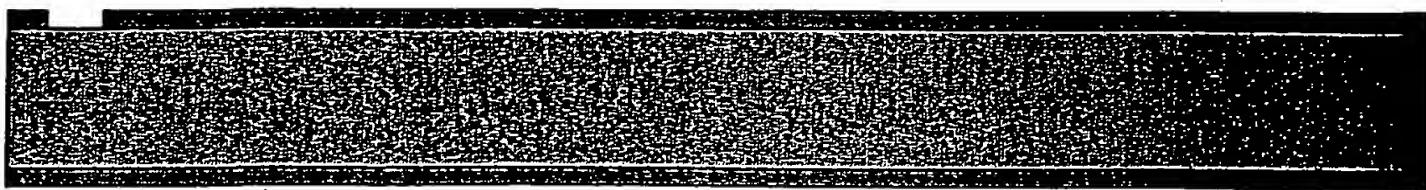


FIG. 5a

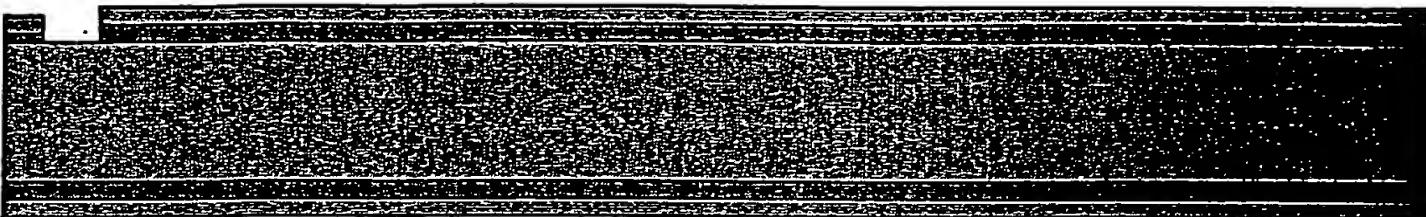


Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 8 of 17

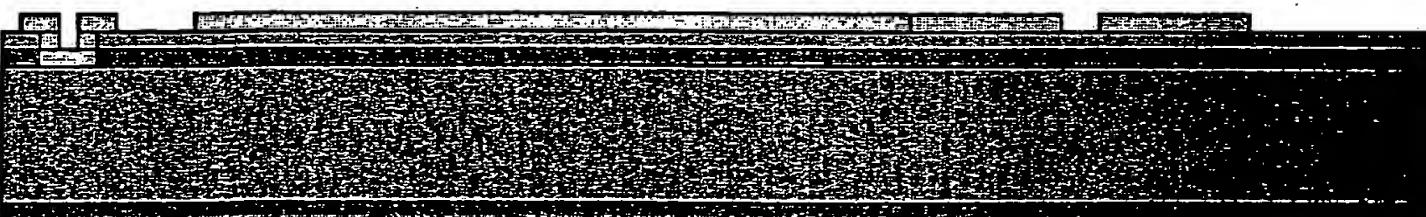
510. Thermal oxide ($\sim 1\mu\text{m}$)



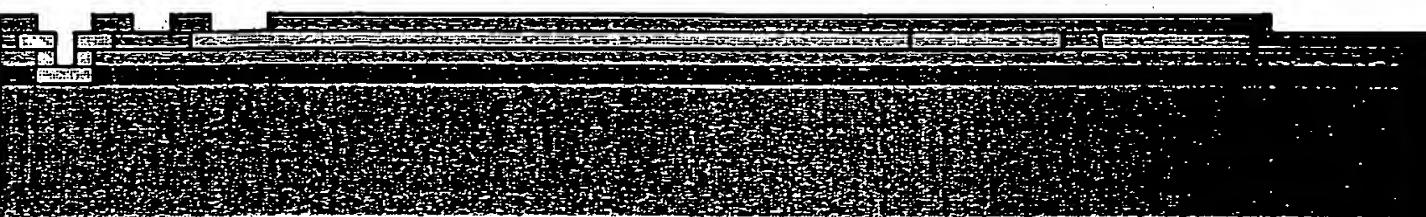
511 Silicon nitride deposition ($\sim 1\mu\text{m}$) and patterning



512 Lower Cr/Cu/Au deposition and patterning



513 Silicon nitride deposition ($0.2 - 0.3\mu\text{m}$) and patterning



514 First polymer deposition and patterning

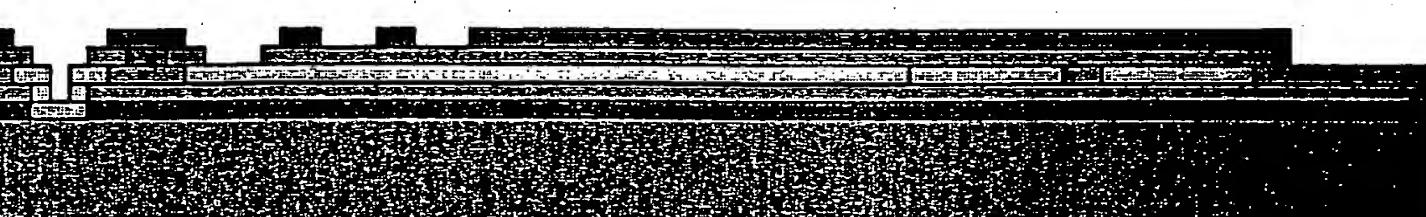
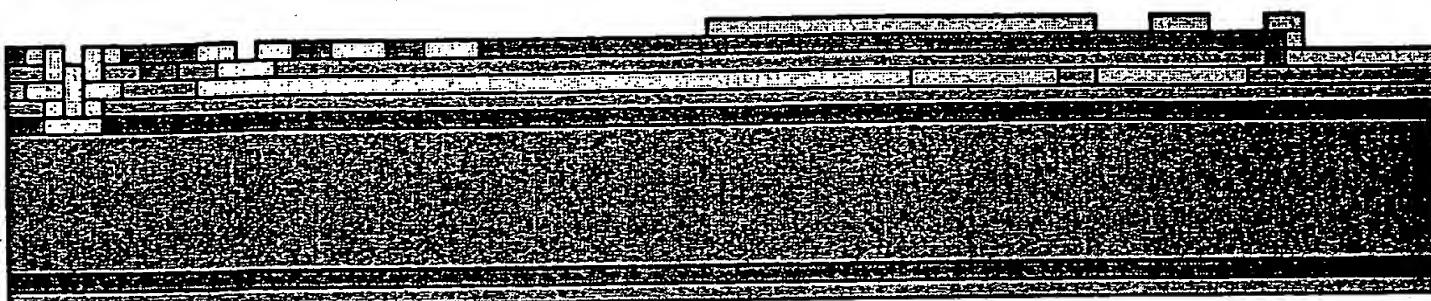


FIG. 5b

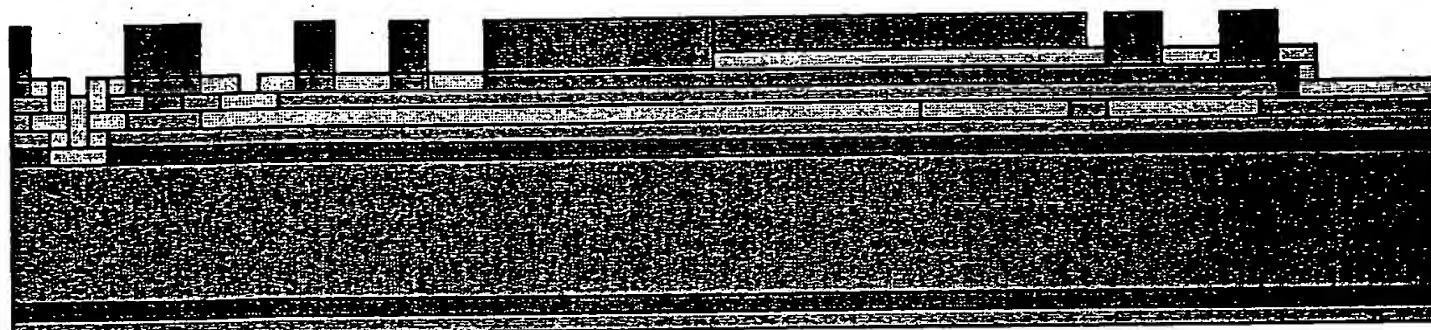
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Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 9 of 17

515 Second Cu/Au deposition and patterning



516 Second polymer deposition and patterning



517 Third Cu/Au deposition and patterning

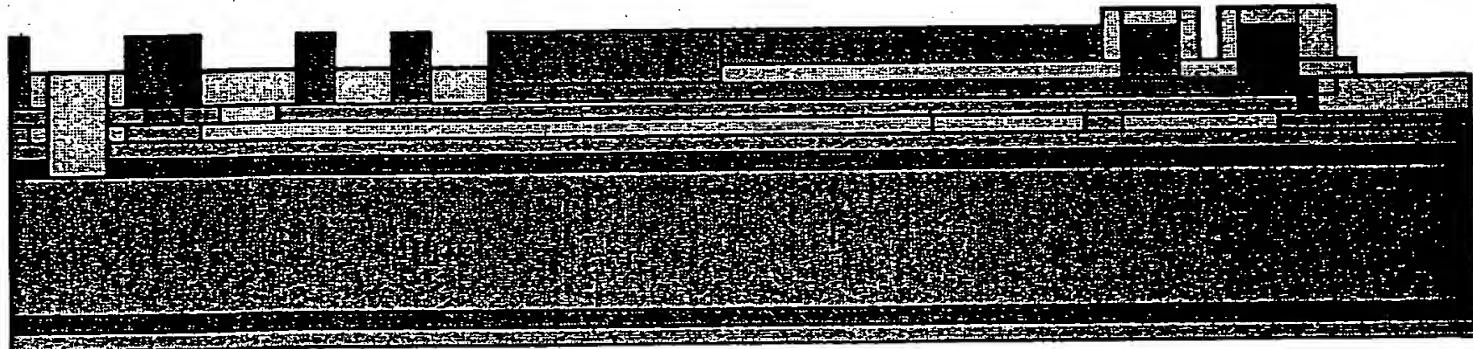
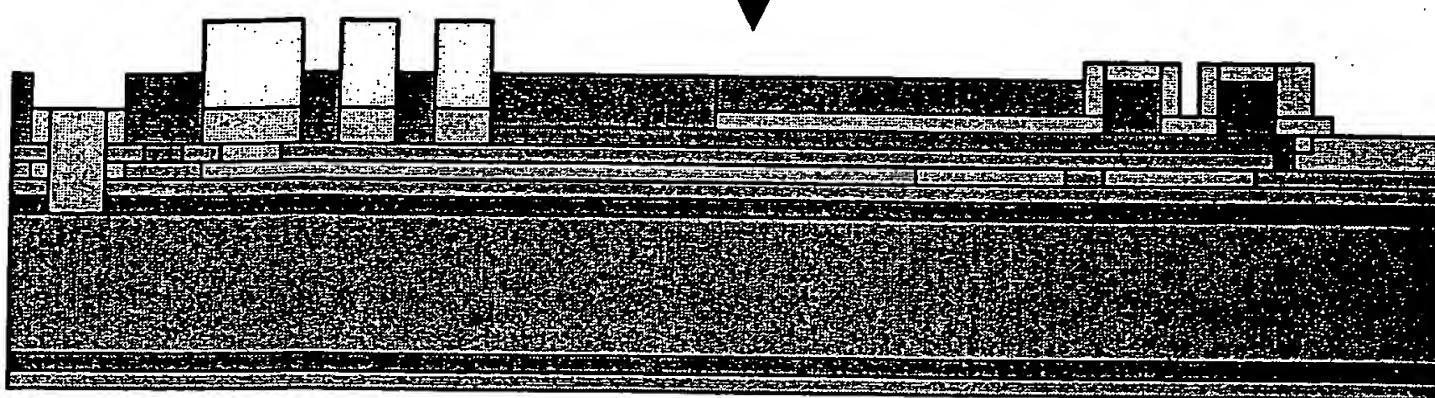


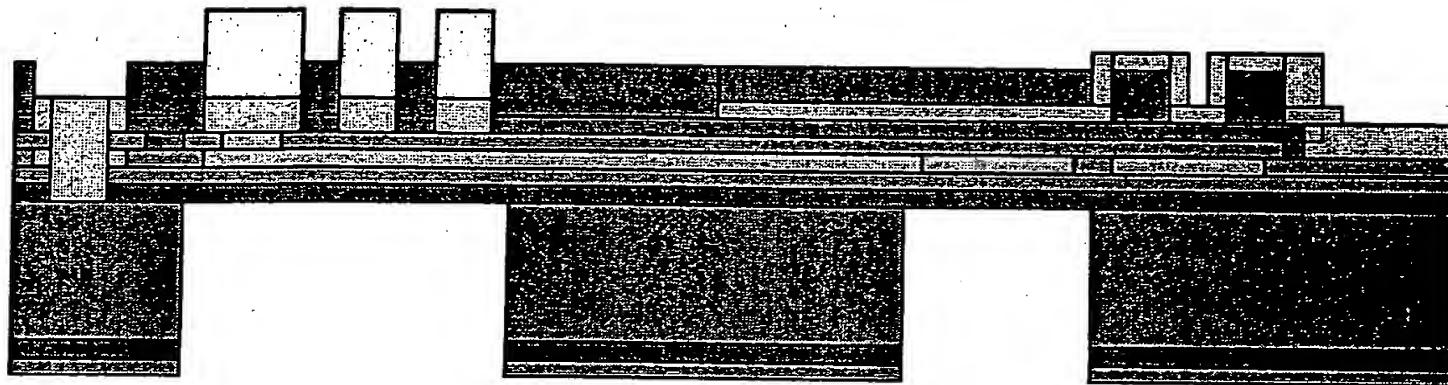
FIG. 5c



518 Electroplating



519 High aspect ratio ICP etching



520 Sacrificial polymer removal

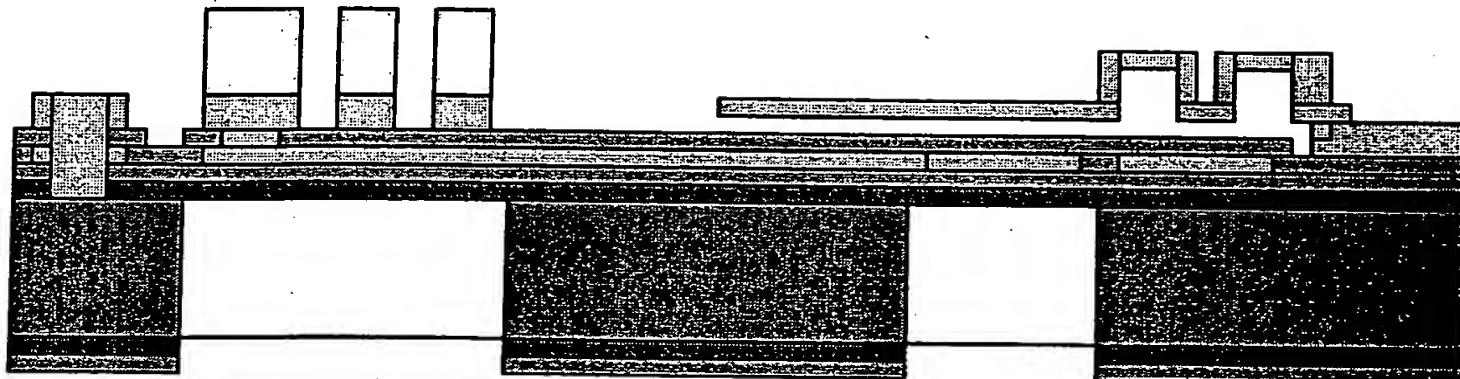


FIG. 5d

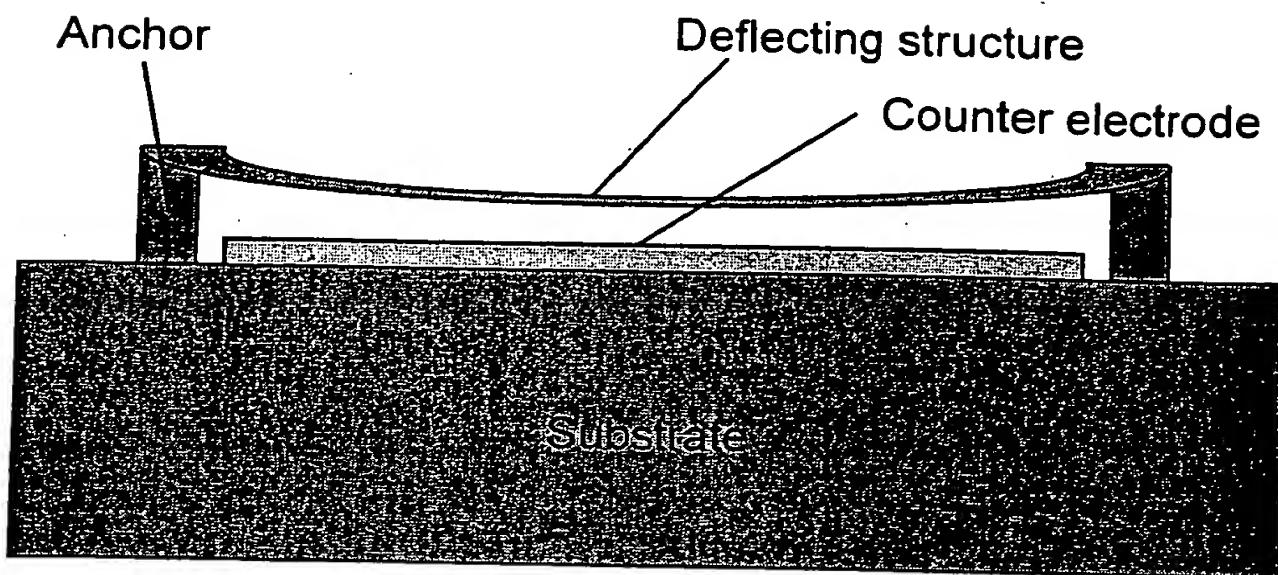
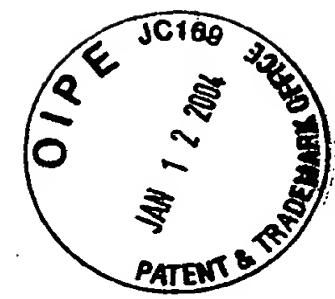


Fig. 6a
PRIOR ART

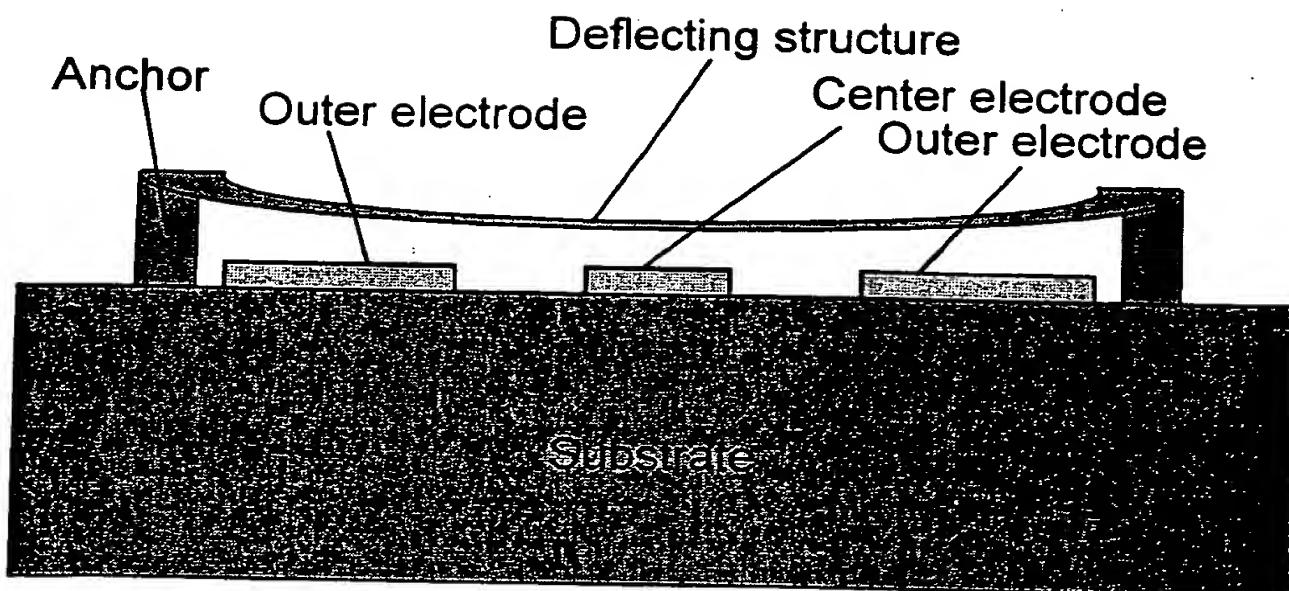


Fig. 6b

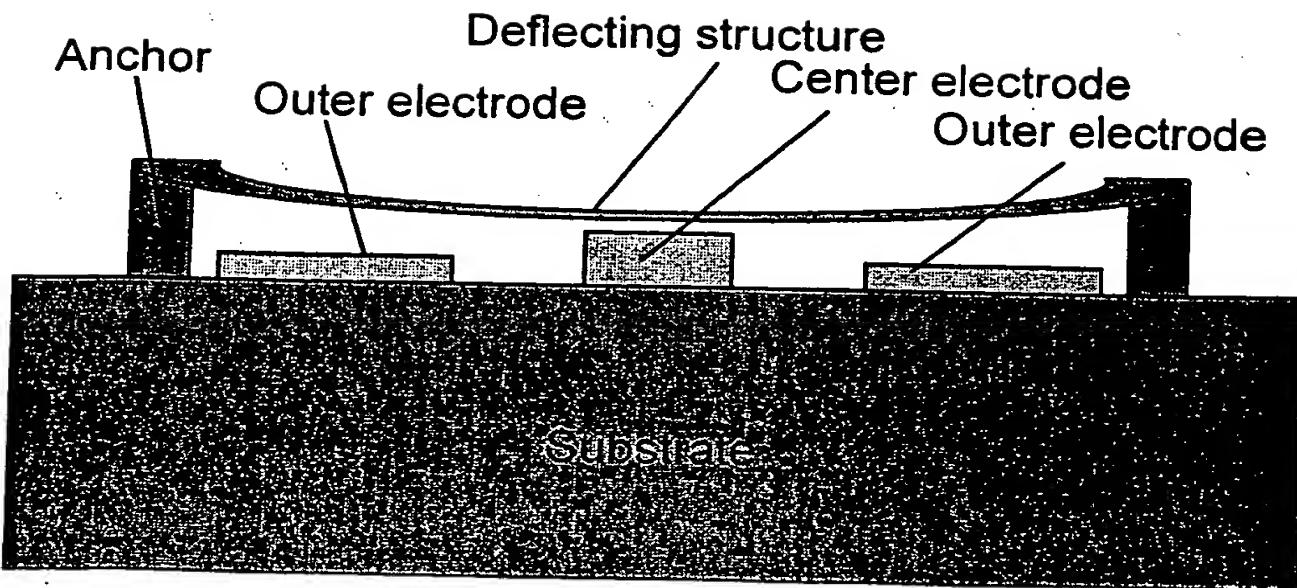
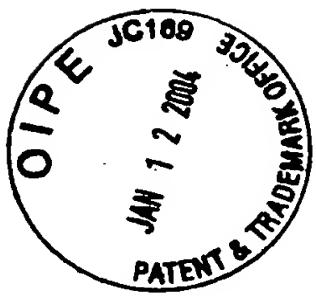


Fig. 6c



Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 12 of 17

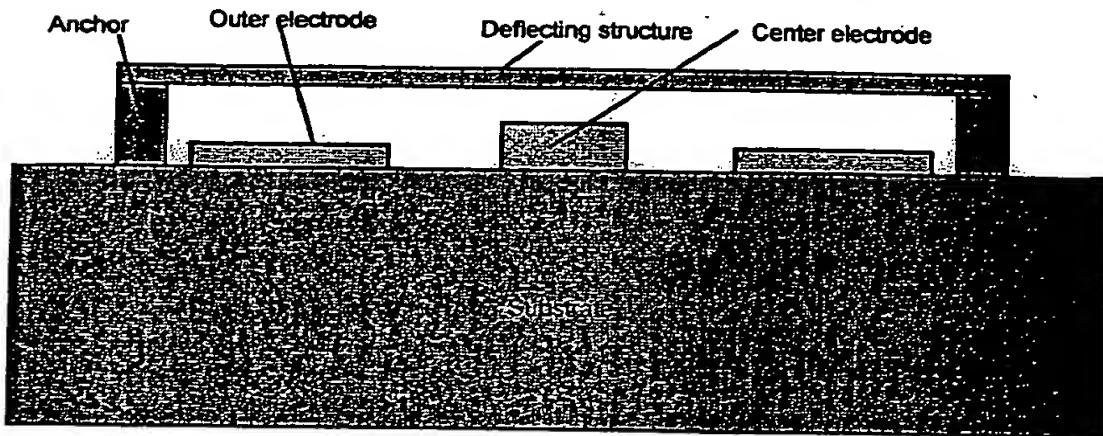


Fig. 7a

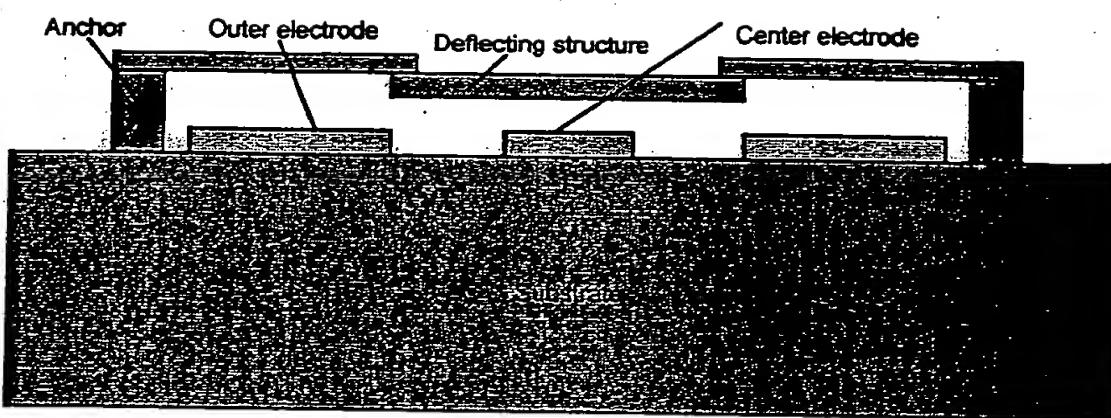


Fig. 7b

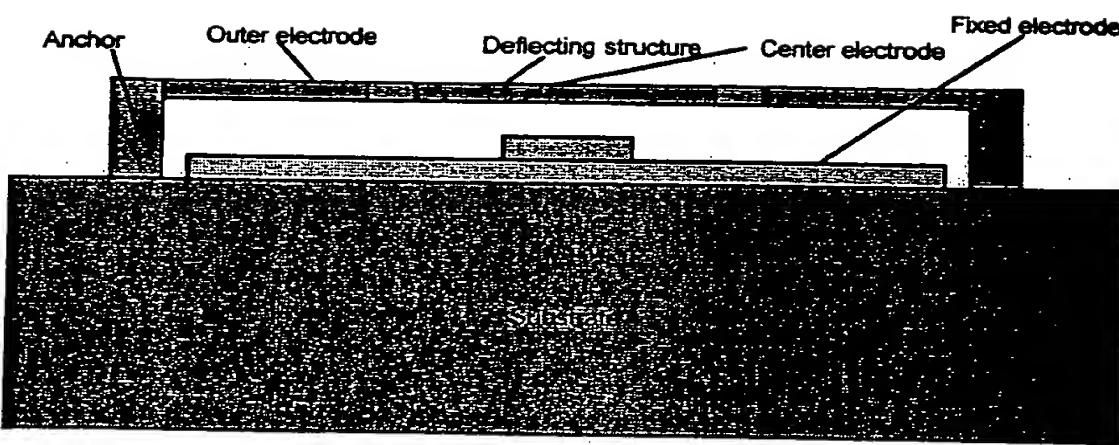


Fig. 7c

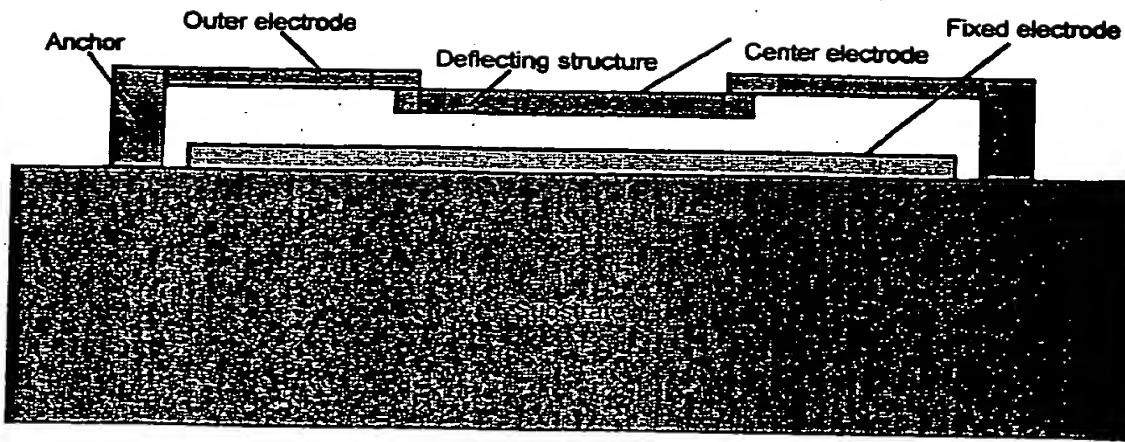
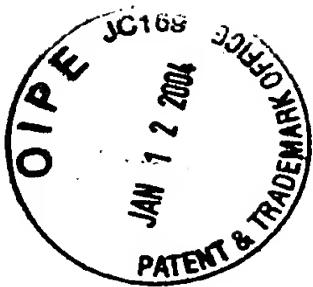


Fig. 7d



Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 13 of 17

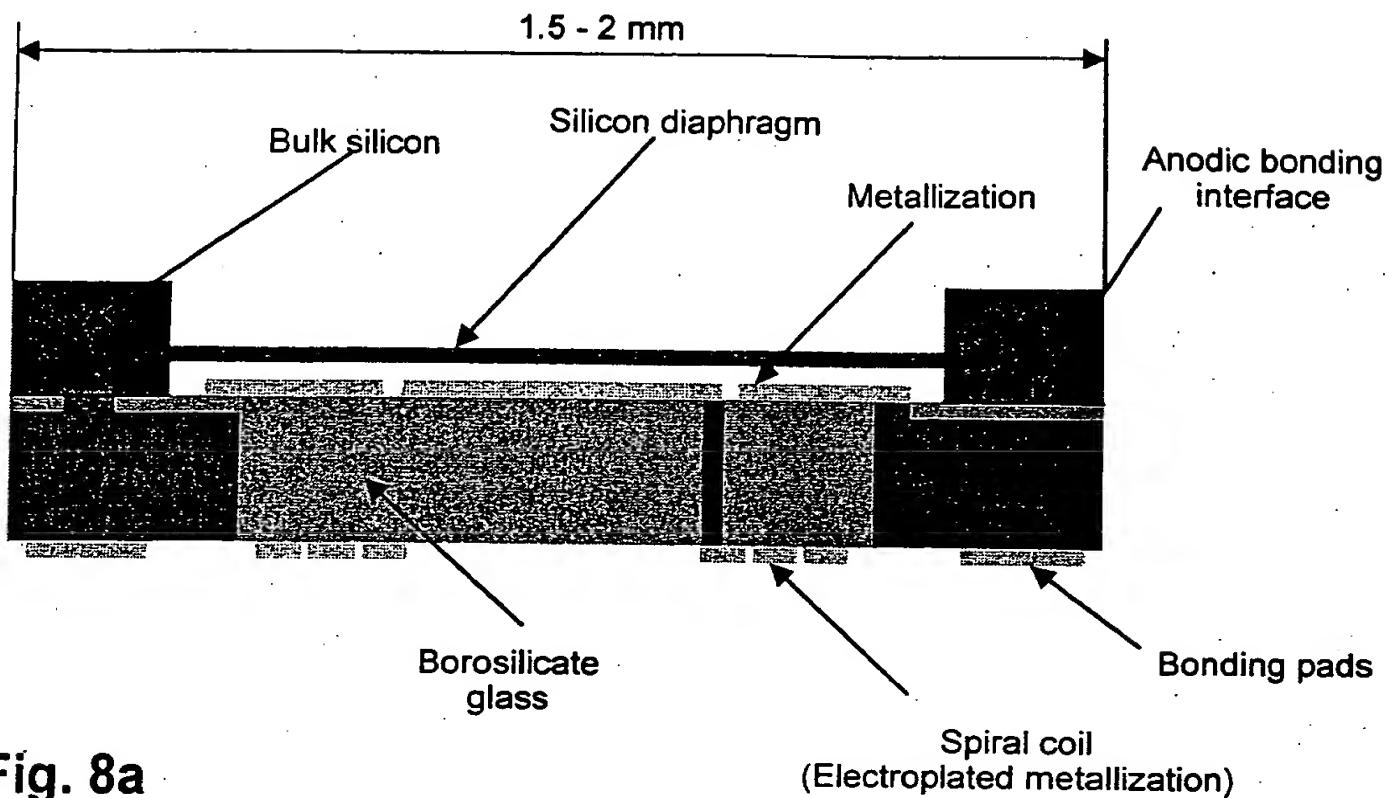


Fig. 8a

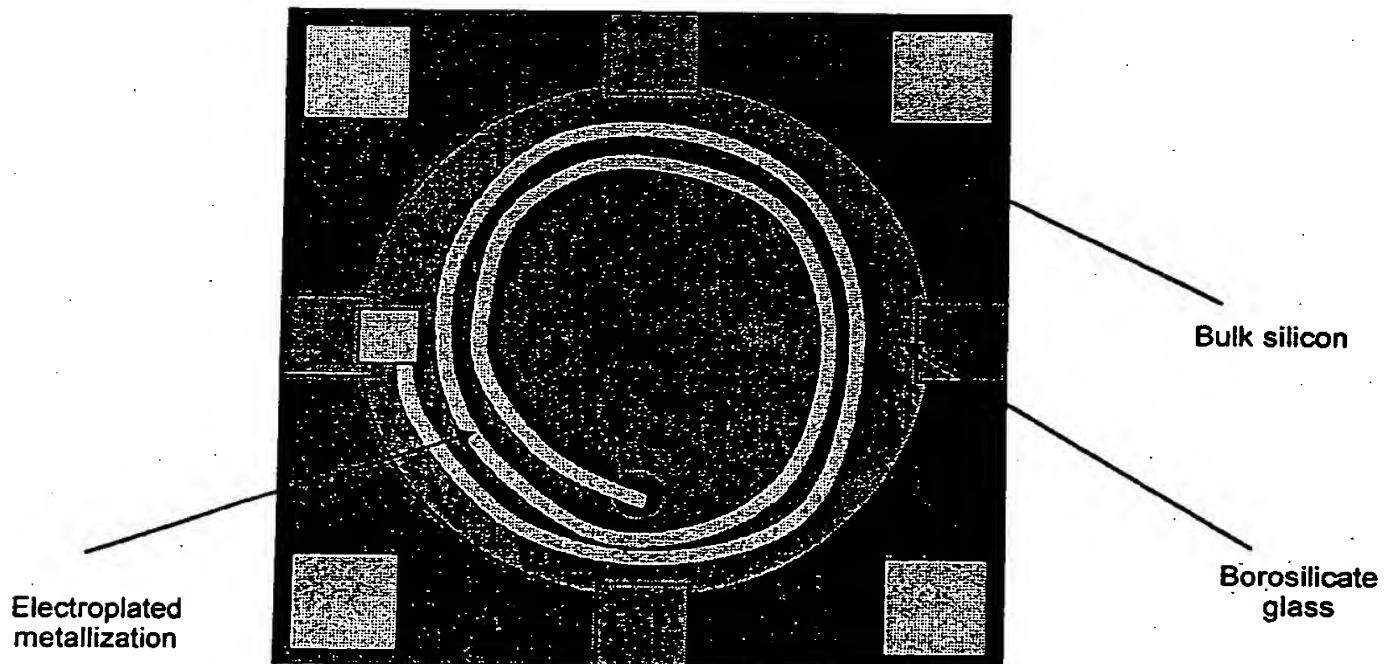


Fig. 8b



Docket# 297-010113-US (PAR)

S/N 09/783,059

Title: Micromechanical Tunable...

Inventor: Tapio Ryhanen et al. Page # 14 of 17

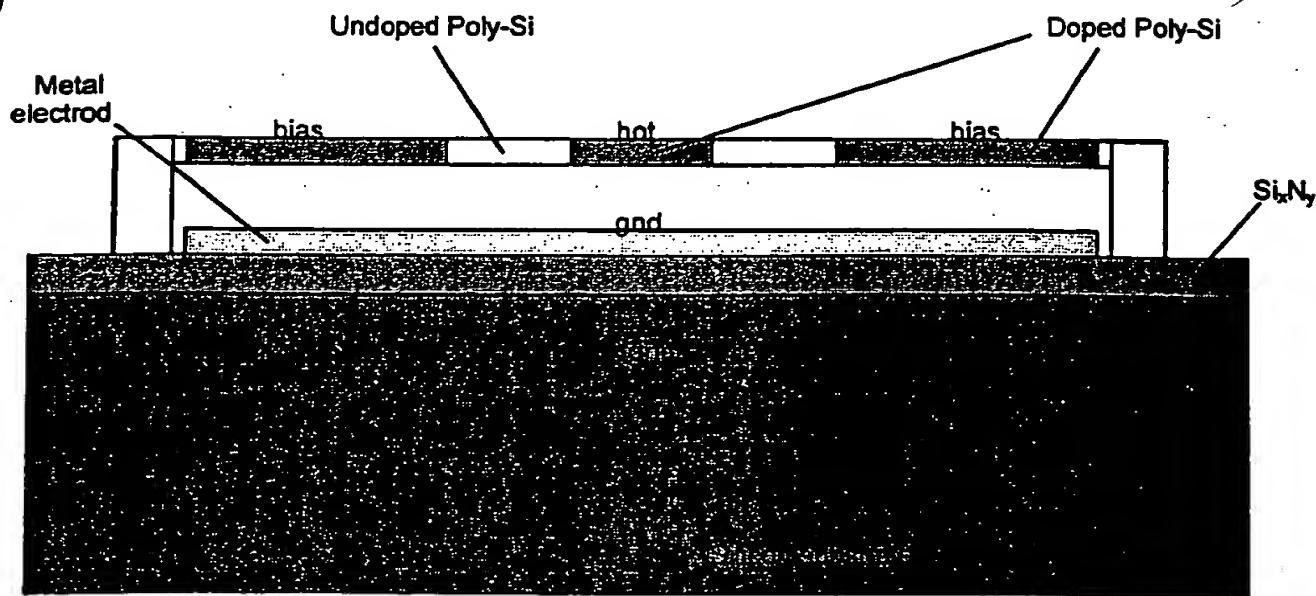


Fig. 9

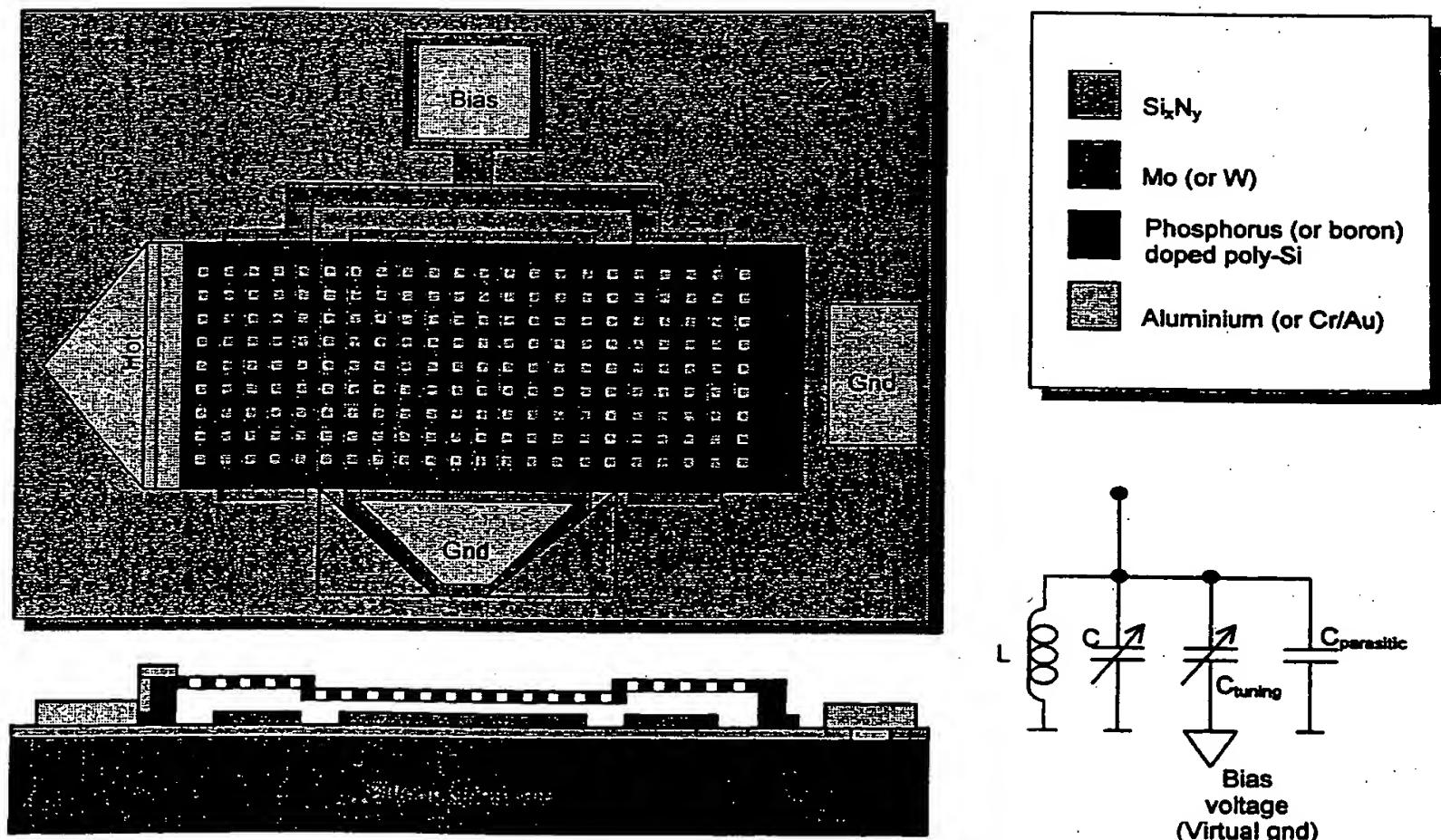
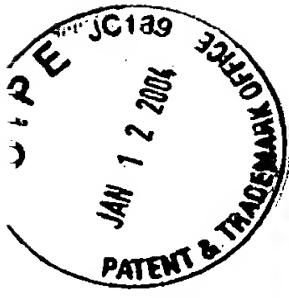


Fig. 10c



Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 15 of 17

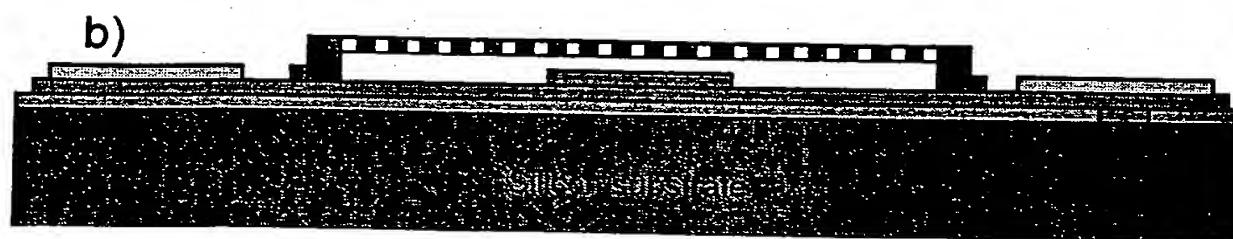
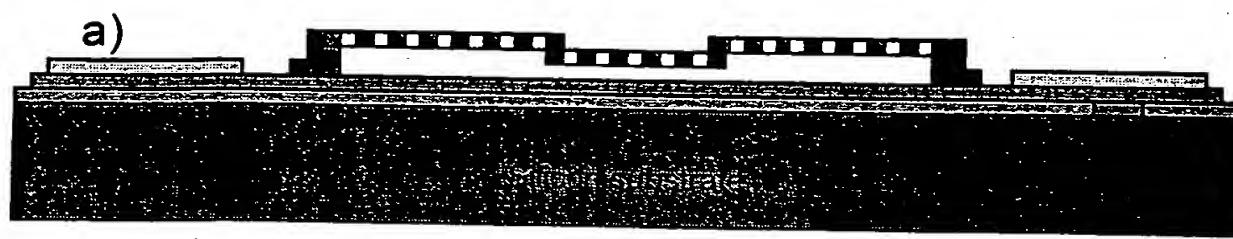
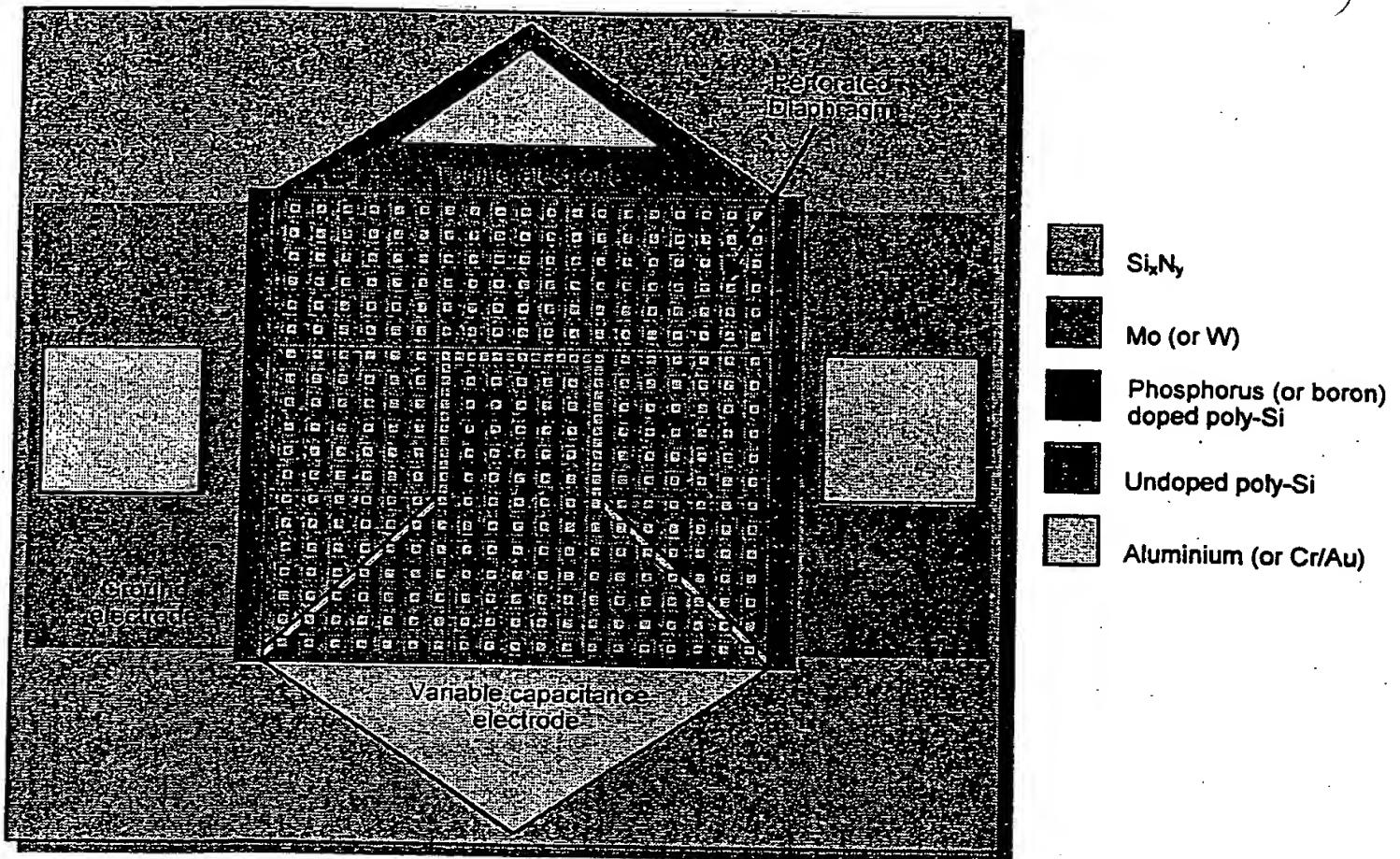
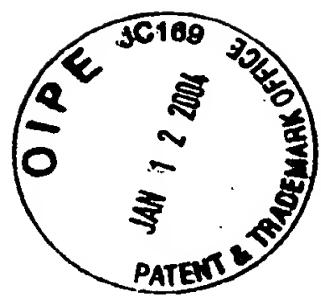


Fig. 10a,b



Docket# 297-010113-US (PAR)
S/N 09/783,059
Title: Micromechanical Tunable...
Inventor: Tapani Ryhanen et al. Page # 16 of 17

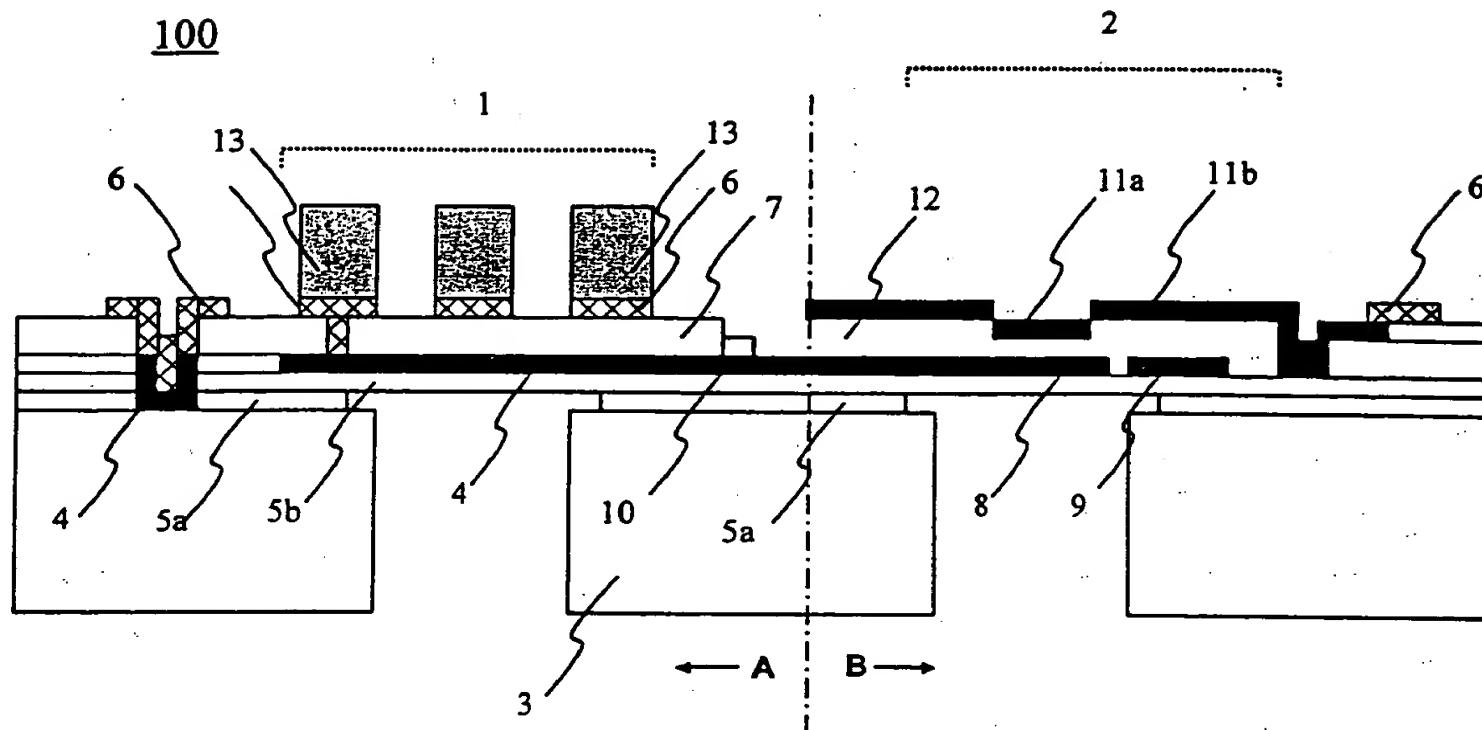


FIG. 11a

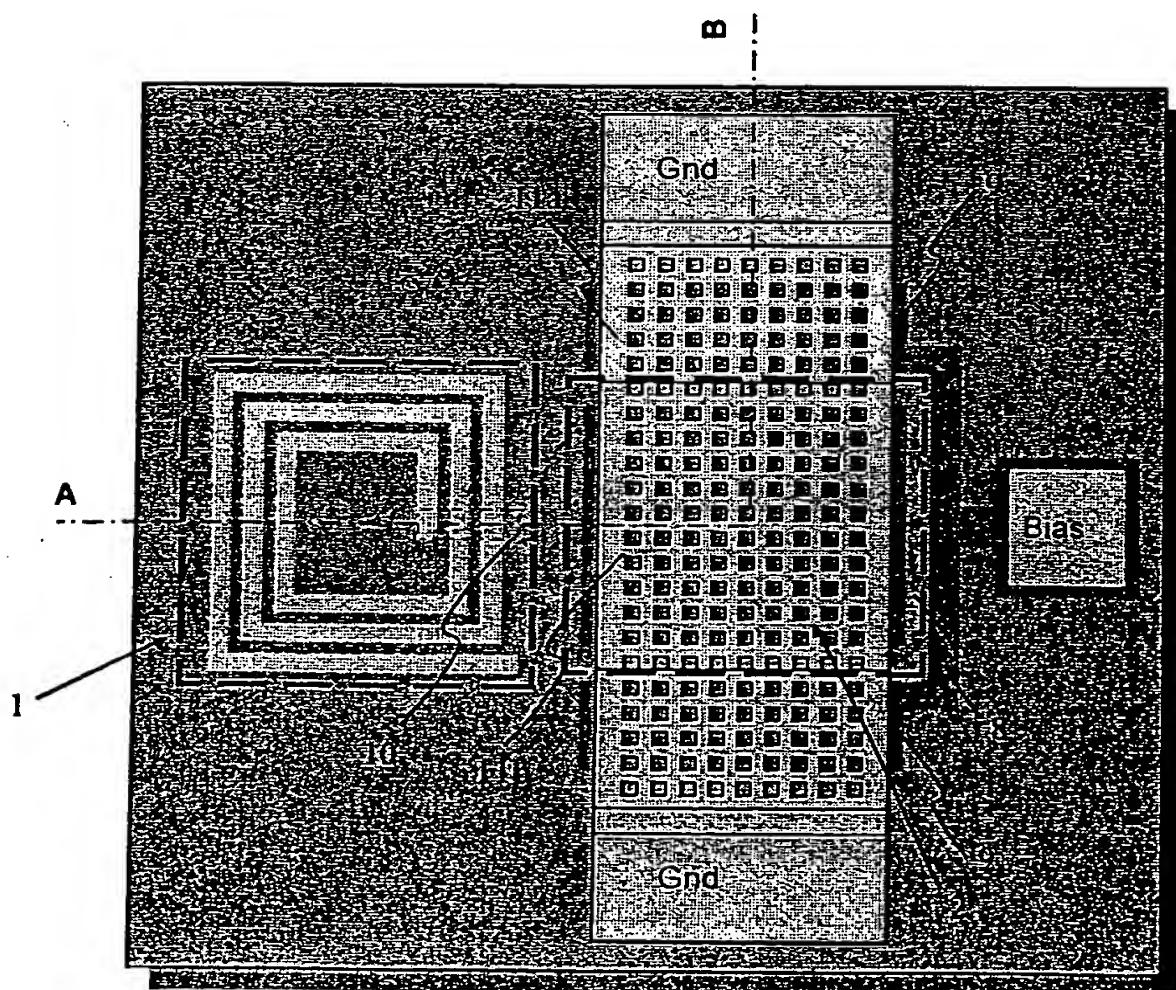


FIG. 11b

